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## Ethnomedicinal plants used in the treatment of leprosy in Jharkhand, India

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### Abstract

Jharkhand is being known for its rich biodiversity and home to many important ethnic communities such as Santhal, Oraon, Munda, Ho, Kharia and Bhumij etc. The present survey was carried out to investigate the ethno-medicinal plant used by different ethnic communities during the month of April 2017 to March 2018 in different areas of Jharkhand that is Ranchi, Gumla, Latehar etc. Data were collected by questionnaire based on personal interviews, informal meetings and field observation with herbal practitioners, vaidhyas, knowledgeable and local persons. The result showed that, thirty-six different plants are used for the treatment of leprosy. The medicinal plants are arranged alphabetically followed by botanical name, common name, family, plant part used and uses. The knowledge of their practices was inherited from their fore parents, relatives and friends by mouth to mouth conversation. Without proper documentation of traditional knowledge of medicinal plants, the cultural heritage is losing its value at a very high rate, there is need to conserve our ancestral knowledge. Hence, the study was carried out with an aim to document medicinal plants and have the potential to form the basis of pharmaceutical drugs for the treatment of leprosy.

**Keywords:** ethnobotanical, leprosy, traditional knowledge, cultural heritage, pharmaceutical drug

### Introduction

Plants have been used for medicinal purpose long before prehistoric period. Ancient unani manuscripts, Egyptian papyrus and Chinese writings described the use of herbs. Evidence exists that Unani hakims, Indian vaidhayas and European and Mediterranean cultures were using herbs for over 4000 years as medicine, indigenous cultures such as Rome, Egypt, Iran, Africa used herbs in their healing rituals while other developed traditional medical systems such as Unani, Ayurveda and Chinese medicine in which herbal therapies were used systematically [1]. Several traditional systems have evolved in the world, which use plants to cater to the needs of health care and they are still in practice around the world. The use of plants and natural products received a fillip when world health organization recognized plant and natural products based medicinal systems as alternative and complimentary therapy in the year 2002 [2]. Recently, WHO (World Health Organization) estimated that 80% of people worldwide rely on herbal medicine for some aspect of their primary health care needs. According to WHO, around 21,000 plant species have the potential for being used as medicinal plants [3]. The utility of plants and natural products was realized in India since Vedic times that resulted in the development of system of medicine the Ayurveda, that describes various uses of botanicals and other natural products in the treatment of several diseases and this knowledge has been compiled as several Samhitas. The charak samhita and other text give a threadbare account of various ailments and their treatment strategies using mainly natural products and plants as medicine [4]. Traditional healers have used several plants to treat various diseases over the years and use of many of these plants as medicine is described in ayurvedic text [5]. Many diseases including cancer, leprosy, syphilis, all types of fever, children's abdominal disorders and many more have been treated using botanical sources [6]. In India, a separate ministry of "AYUSH" was formed in 2014 with the aim of providing infrastructure and framing policies for education and research in Ayurveda, yoga and naturopathy, unani, siddha and homeopathy [7]. Leprosy is a chronic infectious disease caused by a slow growing acid-fast bacterium called *Mycobacterium leprae* that primarily affects the skin, peripheral nerves, upper respiratory track and eyes. It is also known as Hansen's diseases, after the scientist G. H. Armauer Hansen who discovered *M. leprae* 1873 [8]. Leprosy is known to occur at all ages ranging from early infancy to very old age. Leprosy is curable and treatment in the early stages can prevent disability. Leprosy is likely transmitted via droplets from the nose and mouth, during close and frequent contact with untreated cases [9]. Over 4000 years leprosy affects humanity and it causes 2-3 million people to disable permanently [10].

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The traditional practitioners who are experts in the use of medicinal plants from the primary healthcare provides to both rural and urban populations <sup>[11]</sup>.

## 2. Materials and Methods

### 2.1 Study area

Jharkhand is the 28<sup>th</sup> state of the Indian union established on November 15<sup>th</sup>, 2000. It lies between 22°00' and 24°37'N latitude and 83°15' and 87°01'E longitude. Ranchi is the

capital of Jharkhand. The state is bounded by Bihar in the north, West Bengal in the east, Chhattisgarh in the west and Orissa on the south with 79,714 sq. km. geographical area. Jharkhand is treasure of forests and woodlands occupy more than 29% of the state. Due to close association of forest, the ethnic people possess a unique knowledge about the medicinal uses of plant wealth of their surroundings from many generations. They depend mostly on ethnomedicines for the treatment of different disease, disorders and ailments.



Fig 1: Study area

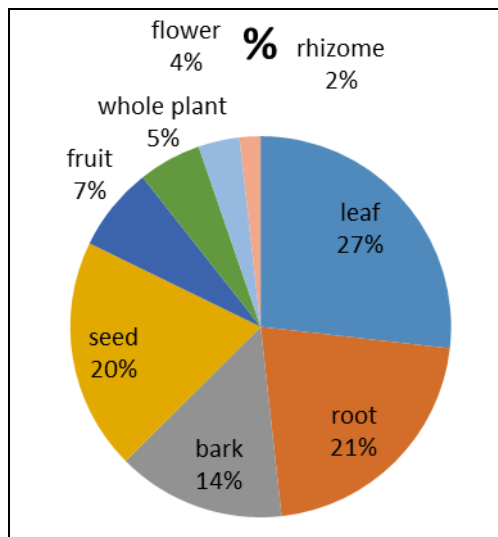
### 2.2 Survey

An ethnobotanical survey was carried out during the year April 2017 to march 2018 for spot collection, identification and ethnobotanical enumeration of medicinal plants, in different areas of Jharkhand such as Ranchi, Gumla, Latehar, Khunti, Chaibasa, Jamshedpur, Dumka. The information on plants used as traditional medicine against leprosy disease were gathered by questionnaire based personal interviews, informal meetings and field observation with herbal practitioners, vaidhyas, knowledgeable and local persons. A total 30 local inhabitants were consulted for the present study. Interviews were conducted in Hindi and local language. The photograph of plant were clicked and plant specimen collected and identified by consultation of different floras of

the region and books.

### 3. Results and Discussions

In this investigation 36 plant species belonging to 36 families used as traditional medicinal plants for the treatment of leprosy by different tribes and ethnic communities in Jharkhand. These plant species were verified and authenticated as 12 herbs, 13 trees, 4 shrubs and 6 climbers. The percentage of various plant part used for treatment of leprosy were 26.78% leaf, 21.42% root, 14.28% bark, 19.64% seed, 7.14% fruit, 5.35% whole plant, 3.5% flower and 1.78% rhizome (graph 1). There was no standard dose for all the patients but dosage depends mostly on the intensity of disease and the age of the patient.



**Graph 1:** Showing the percentage of plant part used in treatment of leprosy

The botanical name of the plant species was arranged alphabetically with their families, local name, habitat and their nature of administration are recorded in Table 1.

**Table 1:** Enumeration of ethnomedicinal plants used to cure leprosy in Jharkhand

S. no.	Botanical name	Common name	Habit	Family	Plant part used	Mode of administration	References
1.	<i>Achyranthes aspera</i> L.	Chirchiri	Herb	Amaranthaceae	Leaf, Root	Paste of leaf and root	11
2.	<i>Adhatoda vasica</i> L.	bakas		Acanthaceae	Leaf	Decoction	14
3.	<i>Aegle marmelos</i> L.	bel	tree	Rutaceae	Leaf, seed	paste	13
4.	<i>Alangium lamarckii</i> (L.f.) Wangerin	Ankol, vismar	tree	cornaceae	Root, bark, seed, fruit	Extract of root & fruit, paste, oil	12
5.	<i>Albizia lebbek</i> (L.) Benth.	shiris	tree	fabaceae	Bark	Extract of bark	11
6.	<i>Amaranthus spinosus</i> L.	Bhaji saag	herb	Amaranthaceae	Leaf, root	Paste, food	11
7.	<i>Andrographis paniculata</i> (Burm.f.) Nees	Chireita	herb	Acanthaceae	Leaf	Leaf extract, paste	11
8.	<i>Asparagus racemosus</i> Willd	Shatavari	Climber	Asparagaceae	Root	paste	13
9.	<i>Azadirachta indica</i> A.Juss.	Neem	Tree	Meliaceae	Bark, Leaf, Seed	Paste, oil	11
10.	<i>Bauhinia variegata</i> (L.) Benth.	Kachnar	Tree	Caesalpiniaceae	Bark, Leaf	Decoction, food	13
11.	<i>Butea monosperma</i> (Lam.) Taub.	Palash	Tree	Fabaceae	Flower, Leaf	Decoction of flower, leaf paste	13
12.	<i>Calotropis procera</i> (Aiton) W.T. Aiton	Akwan	Shrub	Asclepiadaceae	Leaf	Bark powder, leaf sap, latex	11
13.	<i>Carsia tora</i> (L.) Roxb.	Chakor	Herb	Caesalpiniaceae	Leaf, Seed	Leaf decoction, seed paste, food	11
14.	<i>Celastrus paniculata</i> Willd	Kujari	Tree	Celastraceae	Seed	Oil	14
15.	<i>Centella asiatica</i> (L.) Urban	Beng saag	Herb	Apiaceae	Whole plant	Food	11
16.	<i>Cissus quadrangularis</i> L.	Hadjora	Climber	Vitaceae	Stem	Oil	11
17.	<i>Clitoria ternatea</i> L.	Aprajita	Herb	Fabaceae	Root, Flower, Seed	Decoction	11
18.	<i>Cucumis hardwickii</i> (Royle) Alef.	Jungli khera	Climber	Cucurbitaceae	Fruit	food	2
19.	<i>Curcuma longa</i> L.	Haldi	Herb	Zingiberaceae	Rhizome	Paste	11
20.	<i>Datura stramonium</i> L.	Dhatura	Shrub	Solanaceae	Root	Decoction, extract	14
21.	<i>Eclipta alba</i> (L.) Hassk	Bhringraj	Herb	Asteraceae	Whole plant	Powder, paste	11
22.	<i>Gloriosa superba</i> L.	Kalihari	Herb	Colchicaceae	Leaf	Paste	13
23.	<i>Hemidesmus indicus</i> (L.) R.Br.	Anantamul	Climber	Asclepiadaceae	Root	Paste	11
24.	<i>Kigelia africana</i> (Lam.) Benth.	Balam khira	Tree	Bignoniaceae	Fruit	Dry fruit's paste	16
25.	<i>Limnophila conferta</i> Benth.	Muchri	Herb	Scrophulariaceae	Whole plant	Food	17
26.	<i>Marsilea quadrifolia</i> L.	Sunsunia	Herb	Marsileaceae	Whole plant	Food	11
27.	<i>Phyllanthus emblica</i> L.	Amla	Tree	Euphorbiaceae	Fruit, Bark	Dried bark powder boiled with coconut oil	14
28.	<i>Pongamia pinnata</i> (L.) Pierre	Karanj	Tree	Fabaceae	Seed	Seed Oil	13
29.	<i>Psoralea corylifolia</i> L.	Bakuchi	Herb	Papilionaceae	Root, stem, leaves, seed	Fine powder paste, seed Oil	14
30.	<i>Plumbago zeylanica</i> L.	chitrak	Climbing shrub	Plumbaginaceae	Leaf, root	Fine powder paste	15
31.	<i>Pterocarpus marsupium</i> Roxburgh	paisar	Tree	Fabaceae	Bark, leaf	Paste	12

32.	<i>Ricinus communis</i> L.	arandi	shrub	euphorbiaceae	Root, seed	Seed Oil, paste	11
33.	<i>Schleichera oleosa</i> (Lour.) Oken	kusum	Tree	sapindaceae	Bark, seed	Paste, oil	18
34.	<i>Semecarpus anacardium</i> L. f.	bhelwa	Tree	Anacardiaceae	Bark, seed	Gum resin of bark, seed oil	12
35.	<i>Tinospora cordifolia</i> (Thunb.) Miers	giloy	Climber shrub	menispermaceae	Root, stem	Paste	13
36.	<i>Vitex negundo</i> L.	sindwar	Shrub	verbenaceae	Leaf, root	Paste, root decoction with black pepper	12

The medicinal use of plants leaves and roots in the management and treatment of disease has been an age long practice<sup>[19]</sup>. Plant derived medicines are widely used because they are relatively safer than the synthetic alternatives, they are easily available and cheaper<sup>[20]</sup>. Medicinal plants and their uses in the indigenous medicine are well known to many Indian communities<sup>[11]</sup>. The recent trend has been to blend the traditional knowledge with modern health care practices to provide effective health care services to a wider population<sup>[21]</sup>. Among the tribes and ethnic communities only the older people could provide the full information regarding the medicinal properties, mode of preparation and the parts used for plants. The traditional knowledge of medicinal plants is not passing properly from generation to generation due to lack of knowledge, proper documentation, lack of communication and lack of interest among the younger generation of tribes and ethnic communities. Most practitioners formulate and dispense their own recipes and also conservation of these medicinal plants need for future, hence all of these reasons require a proper documentation and research of ethno medicinally important plants of this area in near future in the greater interest of mankind for treatment of leprosy.

### Conclusions

The study shows the dependence of the different tribes and ethnic people on the herbal medicine in their daily life. These people having strong faith in traditional medicine. It is now necessary to make these people aware about the value of their traditional knowledge and help the society in preserving this traditional method of treatment by proper documentation and identification of plant species.

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